

Journal of Catalysis

EDITORS:

W. Keith Hall

Frank S. Stone

EDITORIAL BOARD:

R. B. Anderson

M. Boudart

R. L. Burwell, Jr.

J. B. Butt

A. Cimino

B. Delmon

R. P. Eischens

P. C. Gravelle

J. Haber

C. Kemball

G. W. Keulks

H. Knözinger

J. H. Lunsford

A. Nielsen

J. F. Roth

W. M. H. Sachtler

P. W. Selwood

G. V. Smith

K. Tamaru

S. J. Thomson

P. B. Weisz

Volume 72 • 1981



ACADEMIC PRESS

A Subsidiary of Harcourt Brace Jovanovich, Publishers

New York London Toronto Sydney San Francisco

Copyright © 1981 by Academic Press, Inc.

All Rights Reserved

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the copyright owner.

The appearance of the code at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal or internal use, or for the personal or internal use of specific clients. This consent is given on the condition, however, that the copier pay the stated, per copy fee through the Copyright Clearance Center, Inc. (21 Congress Street, Salem, Massachusetts 01970), for copying beyond that permitted by Sections 107 or 108 of the U.S. Copyright Law. This consent does not extend to other kinds of copying, such as copying for general distribution, for creating new collective works, or for resale. Copy fees for pre-1981 articles are the same as those shown for current articles.

MADE IN THE UNITED STATES OF AMERICA

Contents of Volume 72

Number 1, November 1981

GÉRARD RAMBEAU AND HENRI AMARIGLIO. Ammonia Synthesis on Ruthenium Powder from 100 to 500°C and Hydrogenation of Preadsorbed Nitrogen down to -70°C	1
D. G. HOLAH, I. M. HOODLESS, A. N. HUGHES, AND L. SEDOR. The Liquid-Phase Hydrogenation of 1-Alkenes over a Partially Hydrogenated Cobalt Boride Catalyst	12
SEITARO NAMBA, NOBUYUKI HOSONUMA, AND TATSUAKI YASHIMA. Catalytic Application Hydrophobic Properties of High-Silica Zeolites. I. Hydrolysis of Ethyl Acetate in Aqueous Solution	16
CARL R. F. LUND AND J. A. DUMESIC. Strong Oxide-Oxide Interactions in Silica-Supported Fe ₃ O ₄ . III. Water-Induced Migration of Silica on Geometrically Designed Catalysts	21
RUSSELL MAATMAN. Site Densities in Unimolecular, Solid-Catalyzed Reactions ..	31
R. M. STANFIELD AND W. N. DELGASS. Mössbauer Spectroscopy of Supported Fe-Co Alloy Catalysts for Fischer-Tropsch Synthesis.....	37
DAVID J. SMITH, R. M. FISHER, AND L. A. FREEMAN. High-Resolution Electron Microscopy of Metal-Intercalated "Graphimets"	51
J. N. ARMOR, P. M. ZAMBRI, AND R. LEMING. Ammoximation. III. The Selective Oxidation of Ammonia with a Number of Ketones to Yield the Corresponding Oxime	66
E. G. M. KUIJPERS, J. W. JANSEN, A. J. VAN DILLEN, AND J. W. GEUS. The Reversible Decomposition of Methane on a Ni/SiO ₂ Catalyst	75
MASAMICHI AKIMOTO, YOSHITAKA TSUCHIDA, KAZUYA SATO, AND ETSURO ECHIGOYA. 12-Heteropolymolybdates as Catalysts for Vapor-Phase Oxidative Dehydrogenation of Isobutyric Acid. I. Alkali and Alkaline-Earth Metal Salts	83
J. A. AMELSE, L. H. SCHWARTZ, AND J. B. BUTT. Iron Alloy Fischer-Tropsch Catalysts. III. Conversion Dependence of Selectivity and Water-Gas Shift...	95
SAVITA VISHNOI AND PAUL RATNASAMY. Acidic and Catalytic Properties of the Ca-Pt-H-Mordenite System.....	111
YOSHIO ONO AND HIROSHI ISHIDA. Amination of Phenols with Ammonia over Palladium Supported on Alumina	121
H. COURBON, J.-M. HERRMANN, AND P. PICHAT. Photocatalytic Isotopic Exchange between Cyclopentane and Deuterium over a Bifunctional Pt/TiO ₂ Catalyst ..	129
C. H. CHANG AND S. S. CHAN. Infrared and Raman Studies of Amorphous MoS ₃ and Poorly Crystalline MoS ₂	139
L. M. KUSTOV, V. YU. BOROVKOV, AND V. B. KAZANSKY. Spectra of Hydroxyl Groups in Zeolites in the Near-Infrared Region.....	149

NOTES

ISRAEL E. WACHS AND CLAUDIO C. CHERSICH. Postreactor Reactions during Ethylene Oxidation over Silver	160
F. SOLYMOSI, T. BÁNSÁGI, AND A. ERDÖHELYI. Infrared Study of the Reaction of Adsorbed Formate Ion with H ₂ on Supported Rh Catalysts.....	166
HIROFUMI ITOH, TADASHI HATTORI, KATSUHITO SUZUKI, AKIRA MIYAMOTO, AND YUICHI MURAKAMI. Experimental Evidence for the Role of Acidic Sites in the Side-Chain Alkylation of Alkylbenzenes with Methanol	170
ROGER L. SCHNEIDER AND KENNETH L. WATTERS. An Improved Reaction Vessel for the Synthesis of [Rh(CO) ₂ Cl] ₂	172

LETTERS TO THE EDITORS

C. G. POPE. An Investigation of the Postulate of "Molecular Traffic Control" in Zeolite ZSM-5	174
ERIC G. DEROUANE. Reply to "An Investigation of the Postulate of 'Molecular Traffic Control' in Zeolite ZSM-5" by C. G. Pope	177
J. ENGELHARDT. Isomerization or "Intramolecular Metathesis" of <i>cis</i> -2-Butene	179
KEN-ICHI TANAKA, KATSUMI TANAKA, AND KOSHIRO MIYAHARA. A Reply to the Comment by Engelhardt	182

Number 2, December 1981

J. MARGITFALVI, L. GUCZI, AND ALVIN H. WEISS. Reactions of Acetylene during Hydrogenation on Pd Black Catalyst	185
H. J. KREBS, H. P. BONZEL, W. SCHWARTING, AND G. GAFNER. Microreactor and Electron Spectroscopy Studies of Fischer-Tropsch Synthesis on Magnetite ..	199
E. G. M. KUIJPERS, A. K. BREEDIJK, W. J. J. VAN DER WAL, AND J. W. GEUS. Chemisorption of Methane on Silica-Supported Nickel Catalysts: A Magnetic and Infrared Study	210
T. MAHMOOD, J. O. WILLIAMS, R. MILES, AND B. D. MCNICOL. The Characterisation of Carbon-Fibre-Paper-Supported Platinum and Platinum-Ruthenium Catalysts Using Temperature-Programmed Reduction and Cyclic Voltammetry ..	218
M. BARTÓK, J. SÁRKÁNY, AND A. SITKEI. Investigation of Interactions between Metals and Adsorbed Organic Compounds by Infrared Spectroscopic Study of Adsorbed CO. I. Infrared Study of CO Adsorption and Desorption on Pt/Cab-O-Sil Catalyst	236
ARMANDO J. ROUCO AND GARY L. HALLER. Ethane Hydrogenolysis on Silica-Supported Rh-Ag Catalysts	246
R. E. TISCHER. Preparation of Bimodal Aluminas and Molybdena/Alumina Extrudates	255
A. L. DICKS, R. L. ENSELL, T. R. PHILLIPS, A. K. SZCZEPURA, M. THORLEY, A. WILLIAMS, AND R. D. WRAGG. A Study of Relationships between Pore Size Distribution, Hydrogen Chemisorption, and Activity of Hydrodesulphurisation Catalysts	266
LUCIO FORNI, CARLO GATTI, MASSIMO SIMONETTA, AND MARIO TESCARI. Effect of Methane Formation in Ethylene Hydrogenation over Nickel	274
P. MÜNSTER AND H. J. GRABKE. Kinetics of the Steam Reforming of Methane with Iron, Nickel, and Iron-Nickel Alloys as Catalysts	279
D. R. SHORT, S. M. KHALID, J. R. KATZER, AND M. J. KELLEY. X-Ray Absorption Spectroscopy of Pt-Re/Al ₂ O ₃ Catalysts	288
P. GALLEZOT AND G. BERGERET. The Atomic Structure of Platinum Aggregates Encaged in Y Zeolite. Structure in the Course of Benzene Hydrogenation....	294
GUIDO BUSCA AND VINCENZO LORENZELLI. Infrared Study of the Adsorption of Nitrogen Dioxide, Nitric Oxide and Nitrous Oxide on Hematite	303
BRIAN D. FLOCKHART, KONG YONG LIEW, AND RICHARD C. PINK. Alkylation of Toluene with Propene Using Zeolite Catalysts	314
Á. MOLNÁR AND M. BARTÓK. Studies on the Conversions of Diols and Cyclic Ethers. I. Investigation of Part-Steps in the Dehydration and Fragmentation of 1,3-Diols on a Copper Catalyst	322

W. L. HOLSTEIN AND M. BOUDART. Hydrogenolysis of Carbon and Its Catalysis by Platinum	328
K. B. S. PRASAD, K. B. S. SAIBABU, AND R. VAIDYESWARAN. A Two-Step Rate-Control Model of Vinyl Acetate Synthesis	338
P. R. WATSON AND G. A. SOMORJAI. The Hydrogenation of Carbon Monoxide over Rhodium Oxide Surfaces.	347

NOTES

C. BACKX, J. MOOLHUYSEN, P. GEENEN, AND R. A. VAN SANTEN. Reactivity of Oxygen Adsorbed on Silver Powder in the Epoxidation of Ethylene...	364
V. H. J. DE BEER, J. C. DUCHET, AND R. PRINS. The Role of Cobalt and Nickel in Hydrodesulfurization: Promoters or Catalysts?.....	369
DAVID M. BIBBY, LAURENCE P. ALDRIDGE, AND NEIL B. MILESTONE. Determination of the Aluminium Content of the Zeolite ZSM-5 from Peak Positions in the X-Ray Powder Diffraction Pattern.	373
J. M. TATIBOUËT AND J. E. GERMAIN. A Structure-Sensitive Oxidation Reaction: Methanol on Molybdenum Trioxide Catalysts	375
E. BROČŁAWIK AND J. HABER. SCF-SW-X α Calculations of the Removal of Oxygen from Oxide Surfaces by Vacancy Formation and Crystallographic Shear Mechanisms	379
HAYAO IMAMURA AND SUSUMU TSUCHIYA. Olefin Hydrogenation Using Electron Donor-Acceptor Complexes Derived from Rare Earth Intermetallic Compound SmMg ₃	383
J. W. NIEMANTSVERDRIET AND A. M. VAN DER KRAAN. On the Time-Dependent Behavior of Iron Catalysts in Fischer-Tropsch Synthesis	385
VINCENZO LORENZELLI, GUIDO BUSCA, FERDOS AL-MASHTA, AND NORMAN SHEPPARD. Infrared Evidence for the Formation of Oxidised Species from N ₂ Adsorbed on α -Fe ₂ O ₃ Surfaces	389
KIYOSHI OTSUKA, TAKAO YASUI, AND AKIRA MORIKAWA. Reproducible Hydrogen Production from Water by Indium Oxide.....	392
H. PRALIAUD AND G. A. MARTIN. Evidence of a Strong Metal-Support Interaction and of Ni-Si Alloy Formation in Silica-Supported Nickel Catalysts..	394

AUTHOR INDEX FOR VOLUME 72.....	397
---------------------------------	-----

CUMULATIVE SUBJECT INDEX FOR VOLUMES 67-72.....	399
---	-----

